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PROTECTION PROJECT
Collaborations and Design for Endangered Fish Species in a Flood Emergency

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SACRAMENTO RIVER BANK PROTECTION PROJECT (SRBPP)

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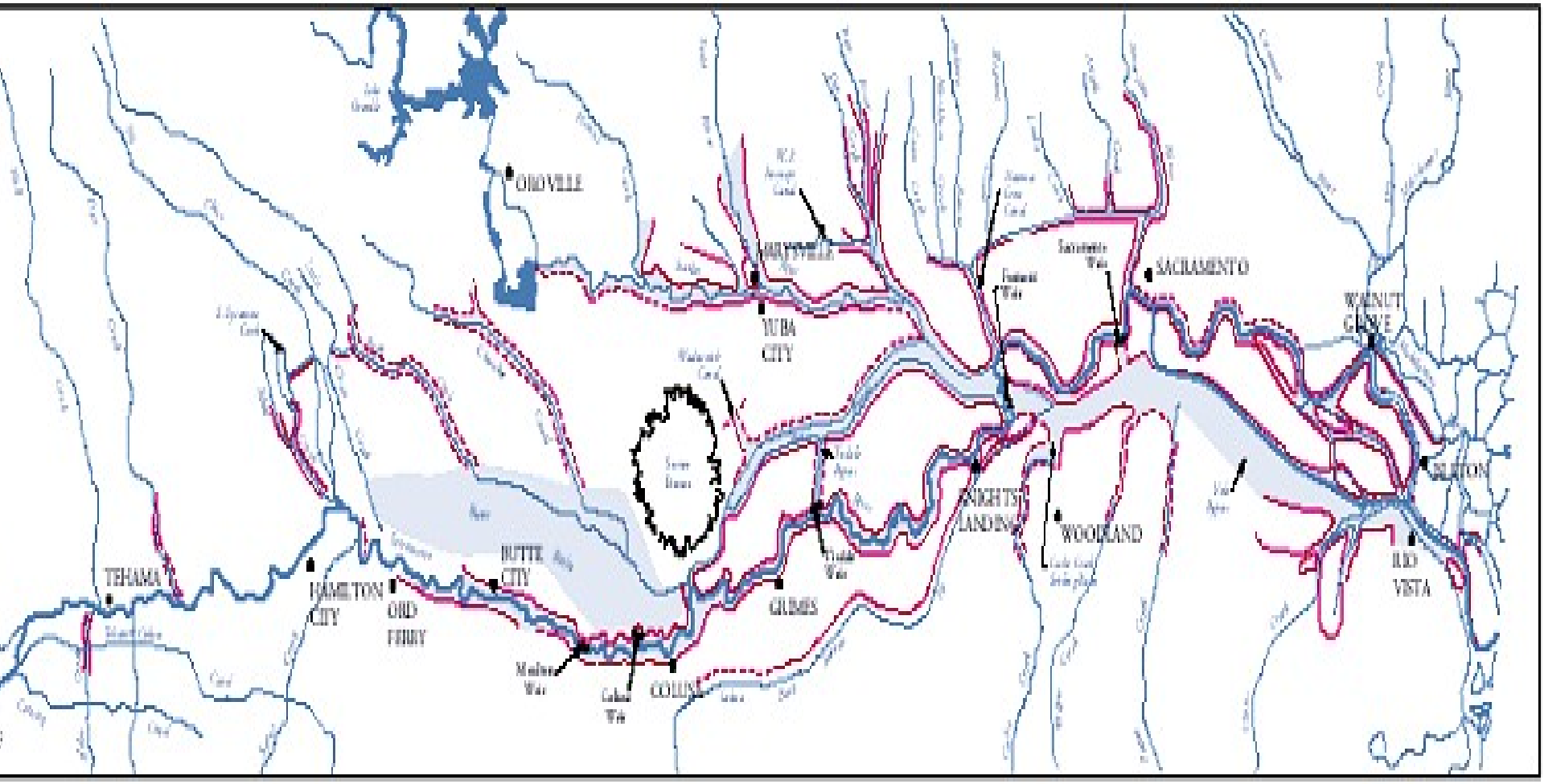
Sacramento River Flood Control System



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Authorization

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- Levees locally constructed in the 1880's
- Sacramento River Flood Control Project authorized in 1917, based on the California Debris Commission's Jackson Plan
- SRBPP authorized by the Flood Control Act of 1960
- The 1960 Act compromises a modification of the existing Sacramento River Flood Control Project to include a long- range program for construction of bank erosion control works and setback levees within the limits of the existing levee system.

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Public Safety

- Since the 1960's the SRBPP has placed over 700,000 linear feet (130 miles) of rock revetment ~24,000 linear feet remain (Additional 80,000 in WRDA 2007).
- 200+ Erosion Sites Remain (2006 Survey)
  - 33 Critical Sites Repaired Fall 2006 (13,000 linear feet)
  - 24 Critical Sites Repaired Winter 2007 (15,000 linear feet)
- In a major flood, we may be unable to prevent all levee failures. (~100,000 linear feet of erosion sites)
- 1.7 million acres in the Sacramento River Basin Inundation Area, protecting 2.2 million people
- Estimated value of improvements $40 billion

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Background SRBPP

- For phase I (1963-1974), the Corps repaired over 80 miles of berm or levees. No mitigation provide during construction. Congress in WRDA 1986 provided funds for the restoration of 260 acres of riparian habitat.

- In phase II (1974-present), an additional 77 miles of bank repair were authorized; only about six miles of that authority remains. Mitigation consisted of protecting vegetated berms, on-site plantings, right 8 easements, and off site riparian mitigation.

- Rock revetment was the primary construction methodology employed in both phases to maintain the system.

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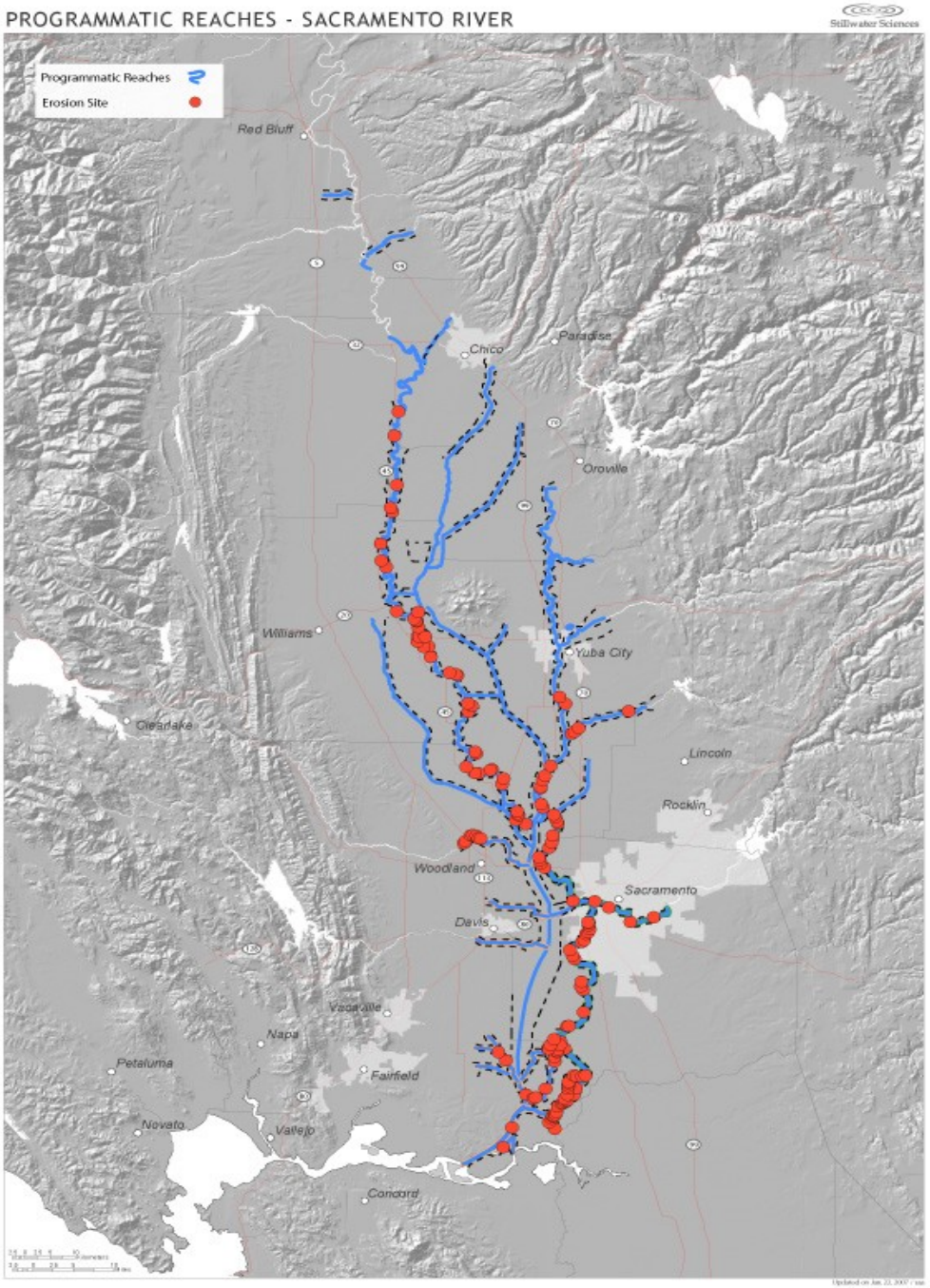
2006 Erosion Sites and USACE Revetment Coverage



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Environmental Concerns

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- Current authority results in significant impacts.
  - Loss of fluvial functioning, effects to riverine dependent species.
  - Compensation for previous SRBPP projects have resulted in loss of habitat quality even with approved mitigation.
  - Direct impacts to 8 ESA/EFH listed species, five of which are fish species under NMFS/USFWS regulatory purview.

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Species

USFWS Affected Species

- Delta Smelt
- Giant Garter Snake

- Valley Elderberry Longhorn Bee

NMFS Affected Species

- Sacramento River Winter-Run Chinook Salmon

- Central Valley Spring-Run Chinook Salmon
- Central Valley S[illegible]
- Green Sturgeon

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Draft Jeopardy !

USFWS/NMFS –

Nov. 2000 and Feb. 2001

Draft Jeopardy Biological Opinions

RM 149.0 L

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Bank Types

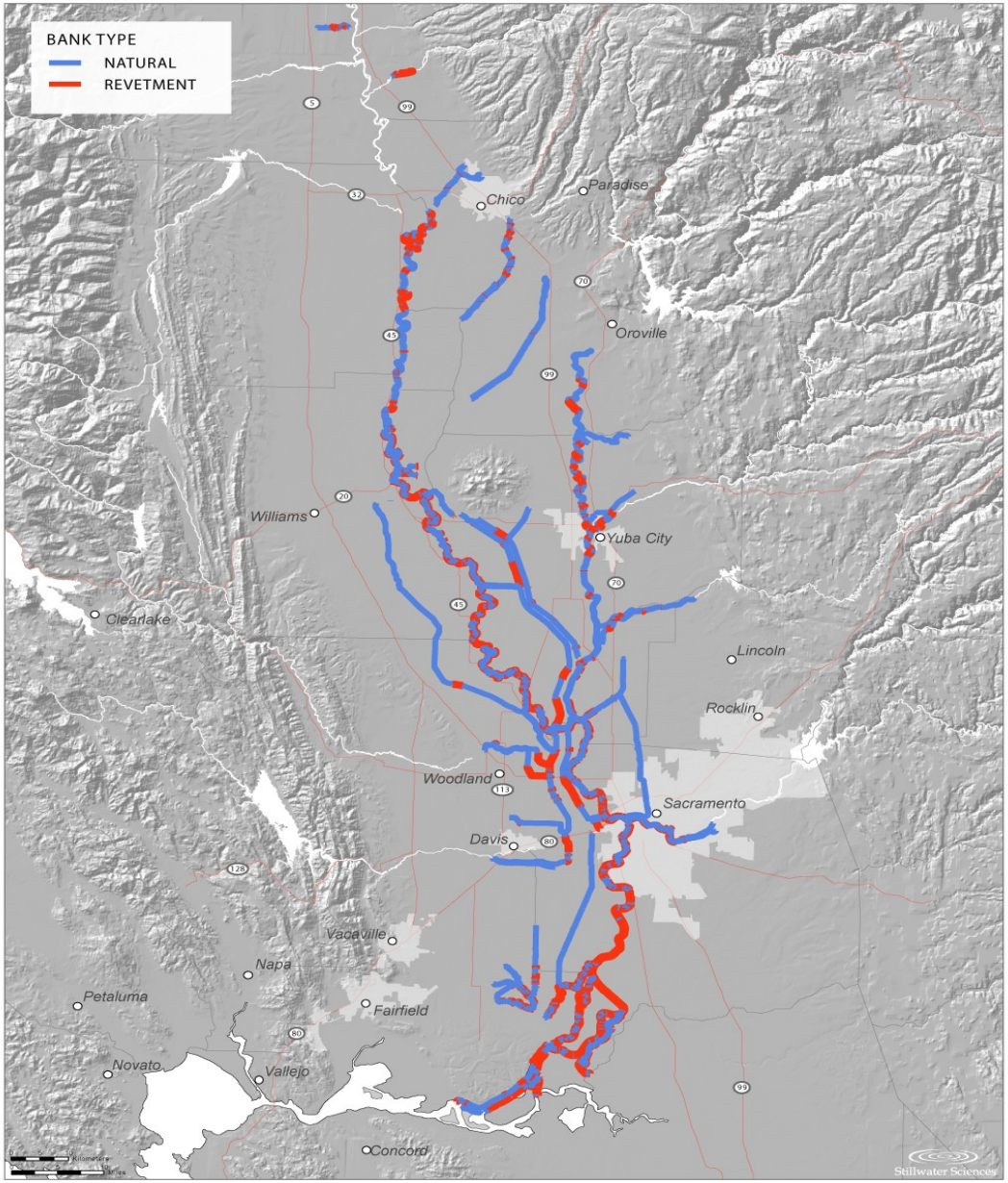

FIGURE 1. Bank type coverage within the SRBPP action area. Coverages are shown along both banks where applicable.

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Instream Woody Material

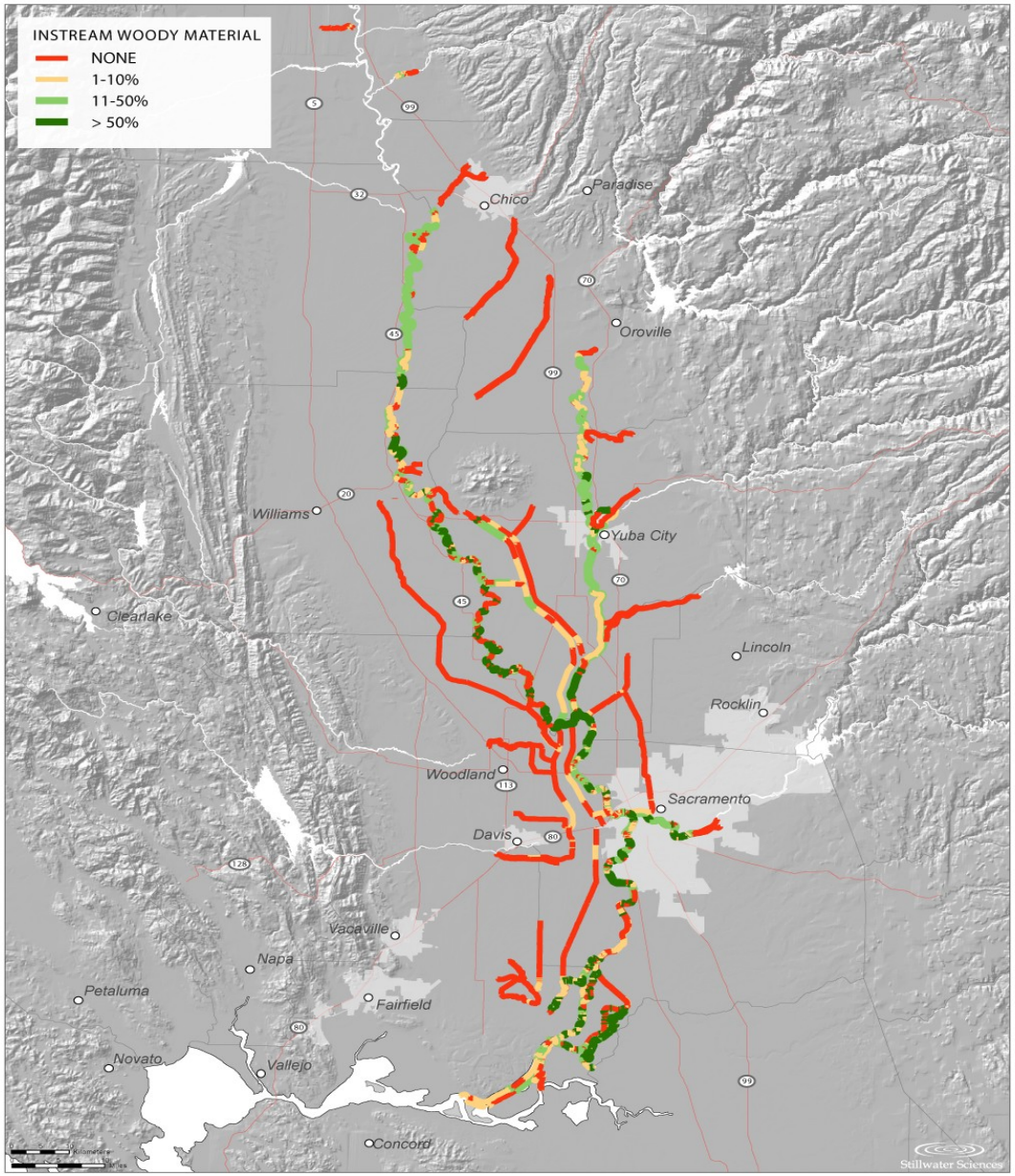

FIGURE2. Instream woody material coverage within the SRBPP action area.
Coverages are shown along both banks where applicable.

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Interagency Coordination

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- The SRBPP IWG formed as a result of biological opinions issued by NMFS and USFWS, Fall 2001.
- Levee Collaborative formed by DWR to bring together action and resource agencies for levee maintenance projects.
- Coordination with Council for Environmental Quality.

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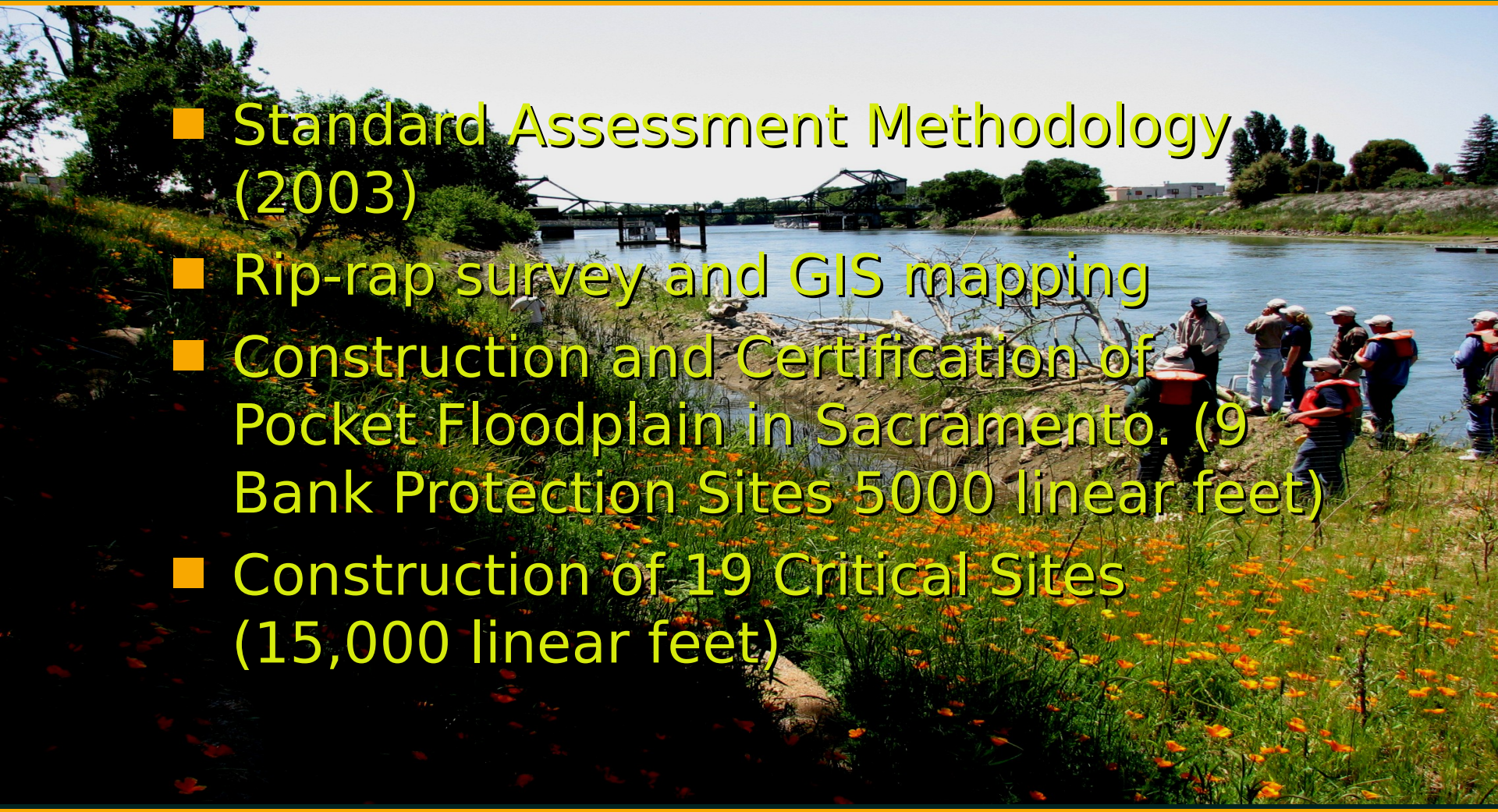
Interagency Working Group Accomplishments



- Standard Assessment Methodology (2003)
- Rip-rap survey and GIS mapping
- Construction and Certification of Pocket Floodplain in Sacramento. (9 Bank Protection Sites 5000 linear feet)
- Construction of 19 Critical Sites (15,000 linear feet)

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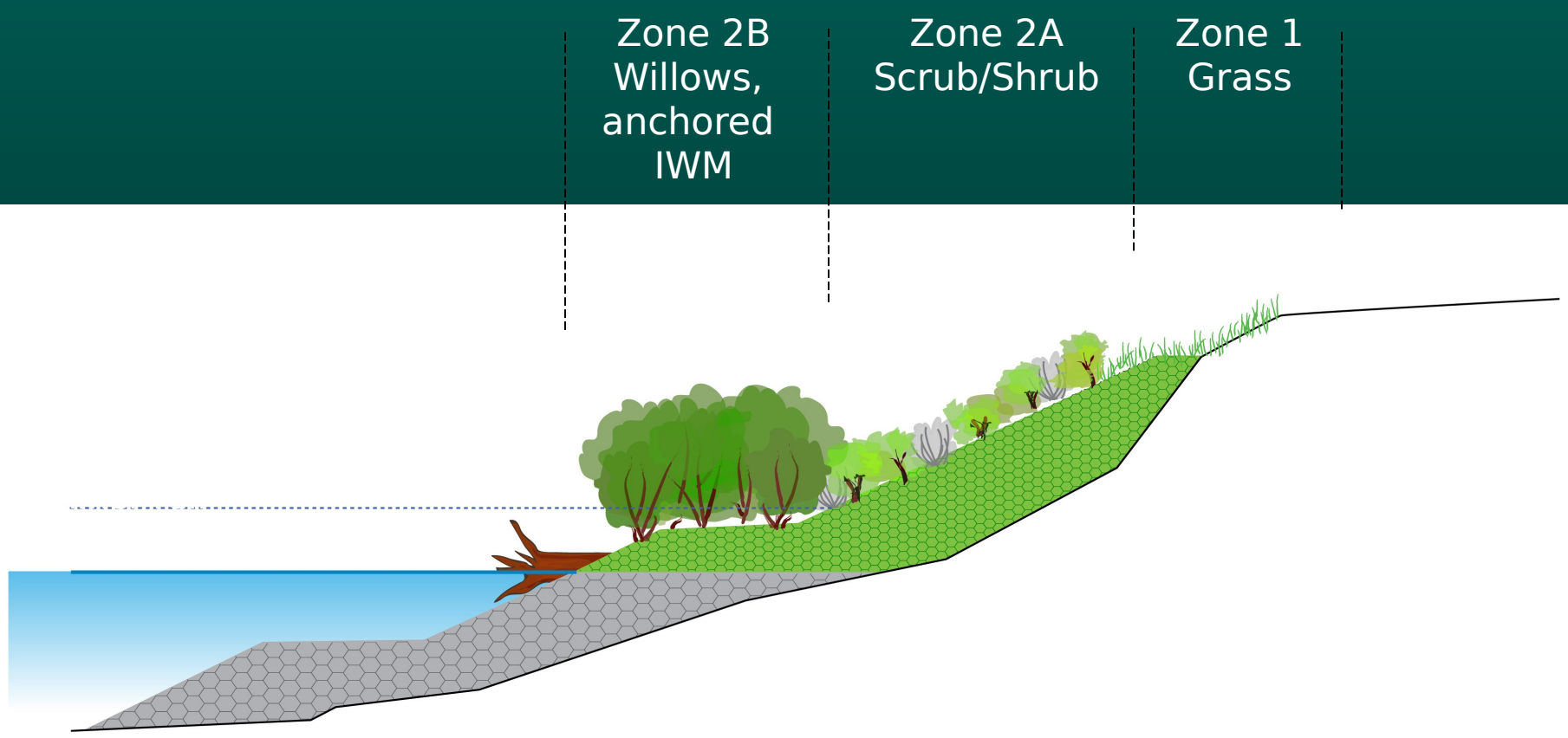
Conceptual Design Example

Riparian Bench with Revegetation and IWM installed below mean summer/fall waterline

No Net Loss



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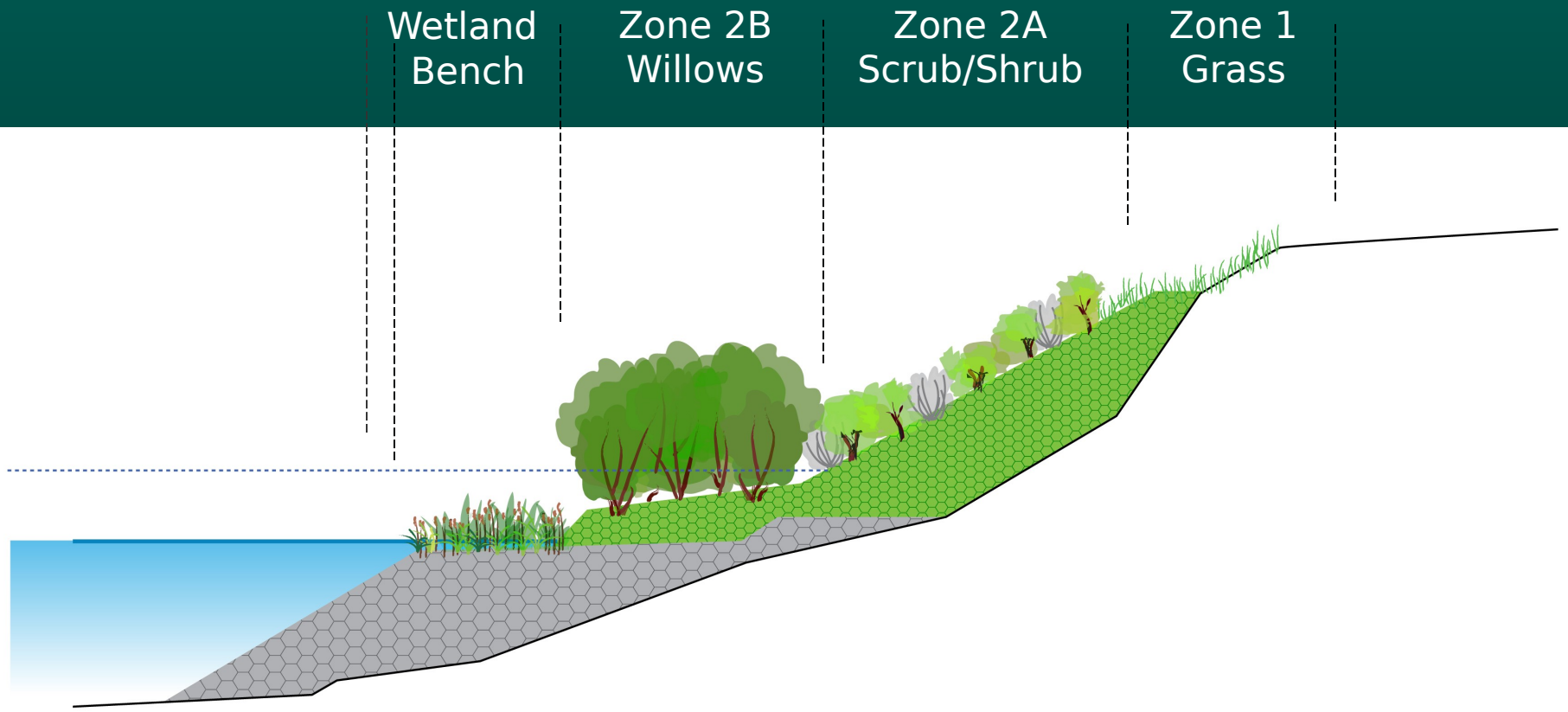
Conceptual Design Example

Riparian and Wetland Benches with Revegetation

No Net Loss



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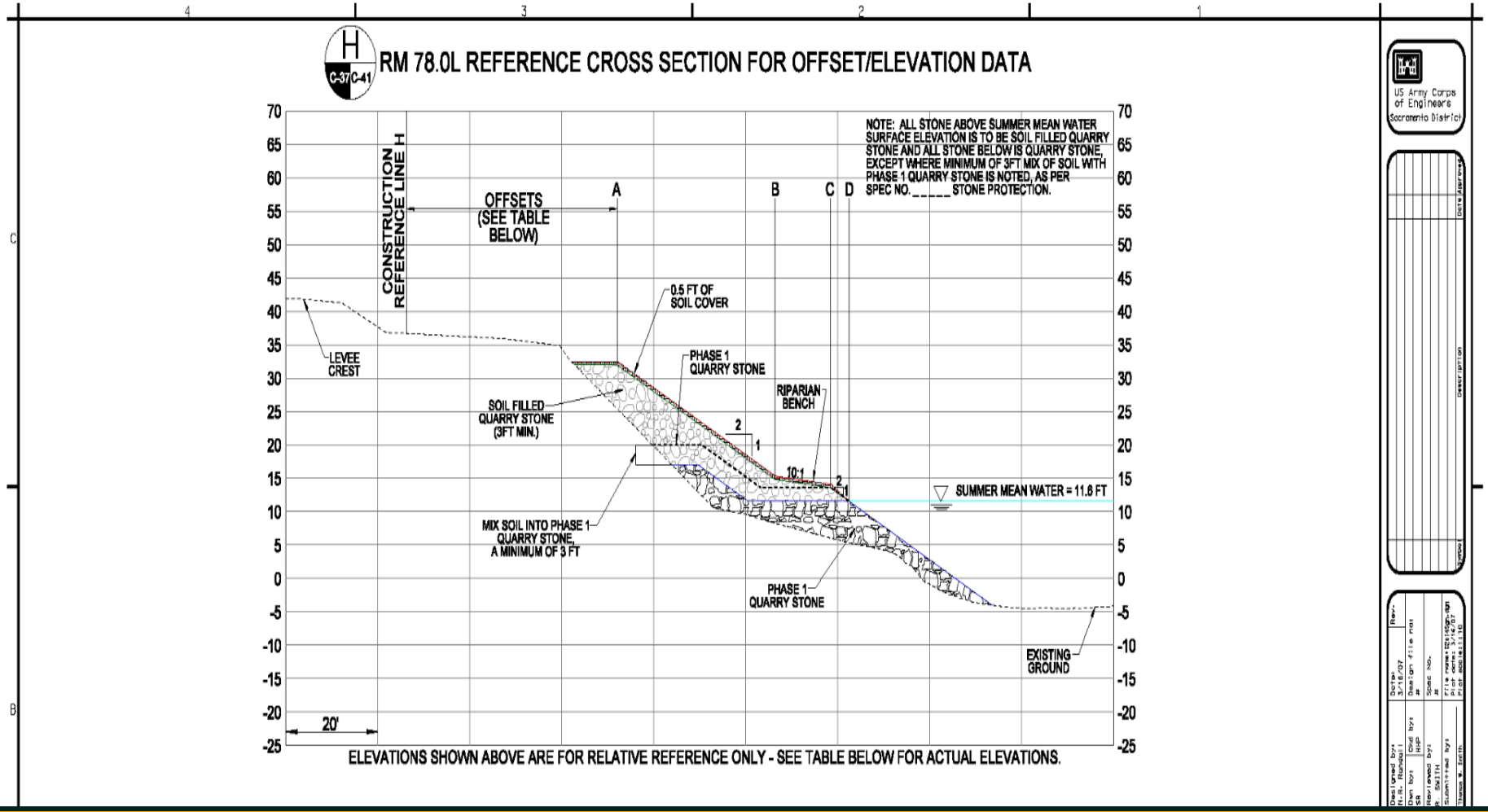
Typical Design



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Wetland Trench

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Instream Woody Material and Floodplain Bench

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Lessons Learned

- Use and Develop Interagency Forums
  - Management Structure
- Emergency Declarations
- Be on-site
- Follow-up
- Maintain Relationships

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Acknowledgments

- Reclamation Board
- Department of Water Resources
- U.S. Army Corps of Engineers
- SRBPP Interagency Working Group (NOAA, USFWS, CDFG)
- Stillwater Sciences
- Ayers Associates

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